PB86-133857

Superfund Record of Decision (EPA Region 9)
Del Norte County Pesticide Storage Area
Crescent City, California, September 1985

(U.S.) Environmental Protection Agency
Washington, DC

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U.S. Department of Commerce
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EPA/ROD/R09-85/010
September 1985

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EPA

Superfund Record of Decision:

Del Norte, CA

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16. ABSTRACT

The Del Norte County Pesticide Storage Area Site, located approximately one mile northwest of Crescent City, CA consists of less than one acre of land contaminated with a variety of herbicides, pesticides, and volatile and semi-volatile organic compounds. Interim and emergency storage activities that occurred during the site operations from 1970 to 1981 have resulted in the contamination of soil and ground water onsite.

Available documentation about the actual day-to-day site operations is inadequate. However, site investigations revealed that a sump, approximately 15 feet by 20 feet, is the primary area of soil contamination, with organic compounds detected to a depth of approximately 15 feet below grade. It is suspected that wastes and/or rinse water were disposed of in the sump. Primary contaminants detected in both soil and ground water are 2,4-D and 1,2 dichloropropane.

The selected remedial action for the site includes: excavation and offsite disposal of approximately 700 cubic yards of soils from the sump and trench areas to a RCRA approved facility; extraction of contaminated ground water; treatment of ground water contaminated by organics and pesticides by carbon adsorption; offsite disposal of spent carbon filters to a RCRA approved facility; treatment of chromium contaminated ground water by coagulation and sand filtration technologies; offsite disposal of chromium-rich waste brine to a RCRA approved facility; piping treated ground water to (see separate sheet)

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Record of Decision Del Norte, CA Contaminated Media: gw, soil Key contaminants: VOCs, 2,4-D, 1,2 dichloropropane, herbicides, pesticides, chromium		

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Abstract - continued

the County Sewer main; and ground water monitoring in accordance with RCRA Part 264. Total capital cost is estimated to be $1.24 million with no O&M requirements.

Record of Decision
Remedial Alternative Selection

SITE Del Norte County Pesticide Storage Area,
Crescent City, California

DOCUMENTS REVIEWED

My decision is based primarily on the following documents describing the findings of EPA's Remedial Investigation and the analysis of cost-effectiveness of remedial alternatives for the Del Norte site:

- Study entitled "Del Norte County Pesticide Storage Area Site Remedial Investigation, Draft Report", July, 1985.
- Study entitled "Del Norte County Pesticide Storage Area Site Feasibility Study, Draft Report", July, 1985.
- Summary of Remedial Alternative Selection.
- Community Relations Responsiveness Summary.

DESCRIPTION OF SELECTED REMEDY

- Excavation and removal of contaminated soils to a RCRA approved, offsite, Class 1, hazardous waste disposal facility.
- Extraction of contaminated ground water.
- Treatment of ground water contaminated by organics and pesticides by carbon adsorption.
- Disposal of spent carbon filters containing organic contaminants to a RCRA approved, offsite, Class I, hazardous waste disposal facility.
- Treatment of ground water contaminated by chromium by coagulation and sand filtration technologies.
- Disposal of chromium-rich waste brine to a RCRA approved, offsite, Class I, hazardous waste disposal facility.
- Disposal of treated ground water by piping to the County sewer main.
- Ground water monitoring in accordance with RCRA Part 264.

DECLARATIONS

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and the National Oil and Hazardous Substances Contingency Plan (NCP) (40 C.F.R. Part 300), I have determined that excavation and offsite disposal of contaminated soils, and pumping and treatment of contaminated ground water along with disposal of treated ground is adequate to protect public health, welfare, and the environment. The State of California Department of Health Services and the North Coast Regional Water Quality Control Board have been consulted and fully support the approved remedy.

I have also determined that this action is appropriate when balanced against the availability of Trust Fund monies for use at other sites. In addition, the off-site transport and secure disposition of contaminated soils along with disposal of treated ground water by piping to the sewer main is more cost-effective than other remedial actions, and is necessary to protect public health, welfare, and the environment.

9.30.85
DATE

John Wise
JUDITH E. AYRES
for Regional Administrator
U.S. EPA Region 9

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

DEL NORTE COUNTY PESTICIDE STORAGE AREA SITE

CRESCENT CITY, CALIFORNIA

September 30, 1985

Prepared by Michele S. Dermer

Federal Response Section

Superfund Programs Branch

Toxics and Waste Management Division

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SUMMARY OF REMEDIAL ACTION SELECTION

DEL NORTE COUNTY PESTICIDE STORAGE AREA SITE
Crescent City, California

SITE LOCATION AND DESCRIPTION

The Del Norte County Pesticide Storage Area Site, located approximately one mile northwest of Crescent City, California, consists of less than one acre of land contaminated with a variety of herbicides, pesticides, and other compounds. The site is located in a rural area immediately south of McNamara Field, the airport which serves Del Norte County (See Figure 1). According to the California Department of Finance, approximately 18,300 people presently reside in Del Norte County. The population for Del Norte County is projected to be 24,100 by the year 2000 (an increase of about 30% over the present population).

As of January, 1985, the population of Crescent City was estimated at 3,280. In 1982, EPA estimated that 250 persons lived within one mile of the Del Norte County Pesticide Storage Area Site. No substantial change has occurred since then.

The Del Norte site and the land surrounding it are owned by Del Norte County. The storage site itself, closed in 1981, is fenced, locked, and posted with a public notice stating that hazardous substances may be present. The entire County-owned parcel (including the site) covers an area of approximately 480 acres. The County property is bounded on the north by state-owned land, which is intended for use as a natural and recreational area; on the south by Washington Boulevard and privately owned farmland; on the east by Riverside Drive and approximately seven private residences; and on the west by the Pacific Ocean.

SITE HISTORY

In December, 1969, the Del Norte County Sanitarian notified the North Coast Regional Water Quality Control Board (NCRWQCB) of the County's intent to operate a pesticide container storage area. The designated site, 200 feet long and 100 feet wide, was to be located at the southern border of the McNamara Field County Airport, 3/4 of a mile east of the Pacific Ocean. The County requested operating advice and approval from the NCRWQCB, and in January 1970, the NCRWQCB responded with suggested operating procedures and requested additional information about the site. During 1970, the site was designated by the NCRWQCB as a Class II-2 disposal site. It was to serve as a county-wide collection point for interim or emergency storage of pesticide containers generated by local agricultural and forestry-related industries. The NCRWQCB approved the site for this use, provided that all containers were triple rinsed and punctured prior to arrival at the site.

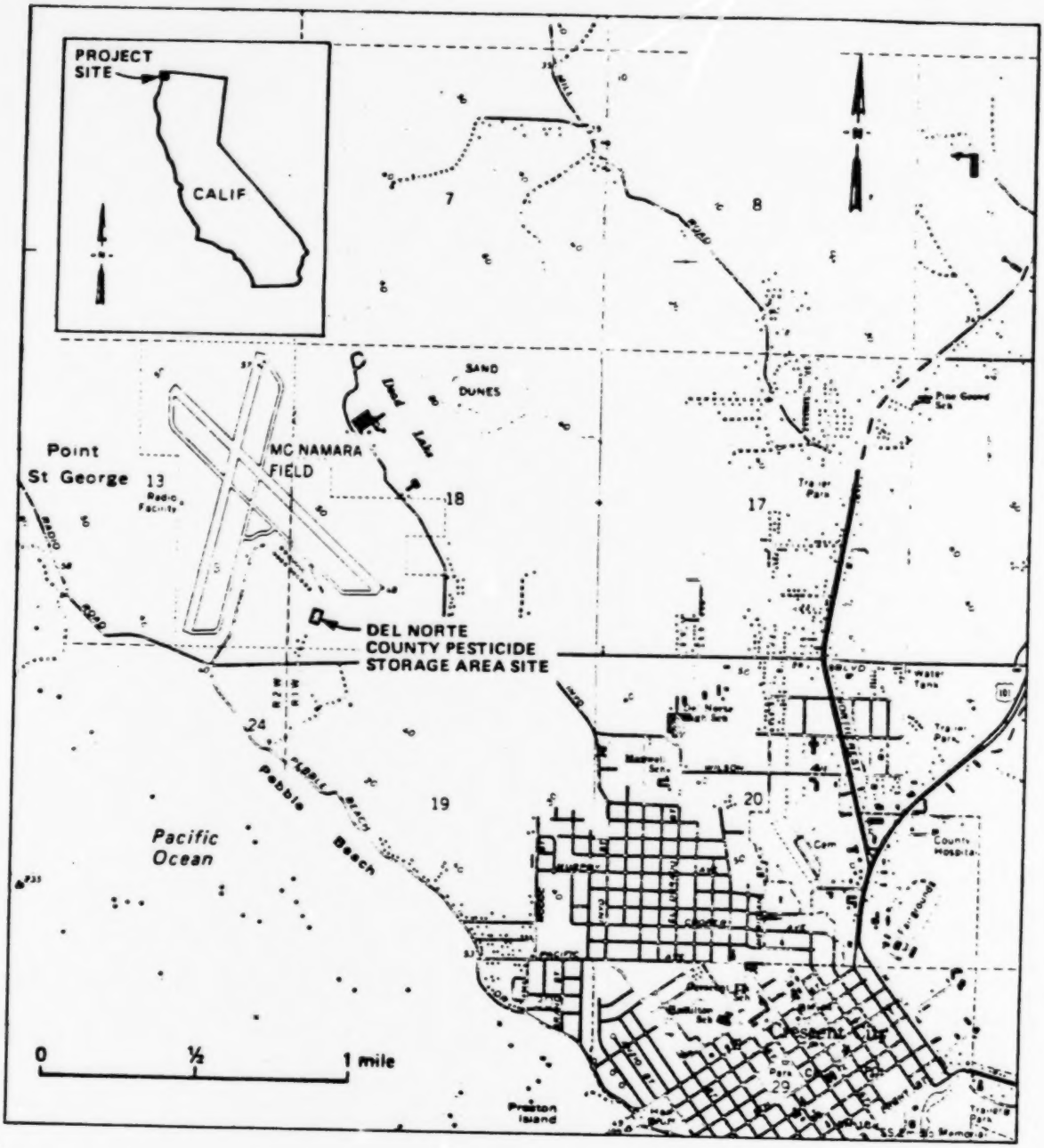

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Figure 1. LOCATION MAP

In 1974, the California Department of Health Services (DOHS) issued a memorandum requiring hazardous waste handlers to comply with a monthly reporting system and fee schedule. The Del Norte site was exempted from the rule due to the small quantities of waste which they handled. DOHS requested that Del Norte County keep accurate records of their operations in spite of the exemption.

In early November, 1976, a NCRWQCB representative inspected the site. On November 12, 1976, the NCRWQCB approved the site for interim and emergency storage of small quantities of industrial and agricultural wastes and pesticide containers. The NCRWQCB waived the Report of Waste Discharge requirement for the site, but required the County to log all incoming wastes and affirm that all empty containers brought to the site had been triple rinsed.

Very little documentation is available about actual day-to-day site operations. Site investigations have revealed that a sump approximately 20 feet long, 15 feet wide and several feet deep was constructed on-site. Testing revealed that this sump contains the highest chemical concentrations on-site. It is likely that wastes and/or rinse water had been disposed of in the sump.

On August 13, 1981, an inspection of the site by the NCRWQCB revealed that the in-coming drums had not complied with the triple-rinse and puncture procedures and that the County had failed to keep an accurate log of incoming wastes. One week later, the County ceased accepting deliveries at the site. Based on an inspection report, there were approximately 1,600 drums on the site, and only a few were properly rinsed and punctured. The condition of the drums ranged from badly corroded to nearly new. The available log of incoming wastes was inspected and found to date back only to 1979. The EPA inspected the site on September 25, 1981, and found numerous Resource Conservation and Recovery Act (RCRA) violations.

As a result of the site inspections, the NCRWQCB issued Cleanup and Abatement Order No. 81-213 in October, 1981, which required the removal of all hazardous wastes (e.g. drums) to a site authorized to accept California-designated Class I wastes. The order also required the County to determine the extent of potential contamination by sampling and analyzing soils and by installing exploratory monitoring wells to sample ground water. The County in turn requested financial assistance from the DOHS to comply with this order later that month. In November 1981, Del Norte County submitted a proposed site closure plan to the NCRWQCB.

In January 1982, the County removed 1,150 of the containers from the site. The rusted or corroded drums were removed and disposed in a section of the Crescent City Landfill. The County Agricultural Commissioner certified that the remainder of the 1,150 drums had been adequately rinsed prior to storage at the Del Norte Storage site. These drums were also disposed of in a different section at the Crescent City Landfill. In April, 1982, the remaining 440 unrinsed drums of D-D and Telone were shipped to a licensed recycler, the Rose Cooperage Company, in Montebello, California.

During these activities, several drums on the site were found to contain usable quantities of various pesticides, which were recycled by the County Agricultural Commissioner for weed control. These drums were then triple-rinsed and disposed of at the Crescent City Landfill. The rinsing location is unknown. Three remaining drums containing pesticides that were not recyclable (i.e. 2,4-D sludge, Thimet, and miscellaneous materials) were put in a vacant building near the County Agricultural Commissioner's office for later shipment to a Class I disposal site. In November, 1983 the three drums were shipped to a disposal site in King City, California.

Under the NCRWQCB Cleanup and Abatement Order 81-213, the County was charged with determining the extent of potential contamination at the site. The County was unable to comply with the order due to lack of funding, so the NCRWQCB and the DOHS carried out post-closure monitoring.

The DOHS collected on-site soil samples from three locations in December 1981. An additional 21 soil samples were collected in June 1982. The results of their analyses showed high concentrations of 2,4-D, 2,4-DB, 2,4,5-TP, 2,4,5-T, ethion and malathion in several areas, particularly the sump and areas of known drum storage.

The NCRWQCB collected ground water samples from two on-site monitoring wells which were installed for that purpose, as well as nine off-site supply wells, in September 1982 and early 1983. The on-site water samples showed elevated levels of the same contaminants found in the soil, along with several other compounds. On the basis of these results, the NCRWQCB determined that a problem existed at the site, and amended its Cleanup and Abatement Order 81-213 in August 1983 to require that the extent of contamination be determined. A plan for cleanup and/or abatement of the contamination was also to be developed. The Del Norte County Board of Supervisors asserted in a letter to DOHS that the County was unable to fund a study to determine the extent of contamination. The County's inability to fund further site investigations triggered the process of incorporating the site on the National Priorities List, in the fall of 1983.

CURRENT STATUS

EPA conducted a remedial investigation and feasibility study (RI/FS) which began in January 1985 after the workplan for the site -- The Del Norte County Pesticide Storage Area Site Remedial Investigation and Feasibility Study Work Plan -- was completed and approved.

EPA conducted remedial investigation activities at the site from January to May 1985. During the remedial investigation, ground water, soil, and surface water were sampled in and around the site property. Results of the surface soil sampling program are shown in Figure 2. Six soil borings were sampled and results are illustrated in Figure 3. As part of the ground water investigation, water monitoring wells were installed and sampled in the vicinity of the site. An additional five domestic supply wells were sampled as part of the RI. Figure 4 shows the location of the wells sampled, and results of sampling rounds are shown in Table 1-1. As part of the remedial investigation, a computer ground water model was used to better understand the flow of ground water in the area of the site, and to predict movement of contaminants from the site.

The major findings of the remedial investigation are:

- Activities that occurred during the site operations from 1970 to 1981 have resulted in contamination of soil and ground water on-site. The contaminants are herbicides, pesticides, and volatile and semi-volatile organic compounds.

- The primary contaminants of concern in both soil and ground water are 2,4-D and 1,2 dichloropropane. Ingestion of these contaminants at levels above the relevant drinking water criteria has been linked to an increased cancer risk. The remedial investigation has shown the on-site monitoring well to contain 2,4-D at a level of 150 ppb; 50 ppb higher than the applicable drinking water standard (MCL). 1,2 dichloropropane was seen at levels of 1200 ppb; with the applicable drinking water advisory (SNARLS) set at 10 ppb for long-term exposure. Use of the contaminated on-site ground water as a water supply would result in a significant health risk.

- The on-site sump, measuring 15 feet by 20 feet is the primary area of soil contamination, with organic compounds detected to a depth of about 15 feet below grade. Contamination of soils on the remainder of the site is restricted to very limited areas, including a previous trench area. Contamination in these areas is likely as a result of leaks or spills from drums. No contamination below 1 foot was detected outside the sump. The spread of soil contamination off-site due to wind or runoff was not detected.

Figure 2.

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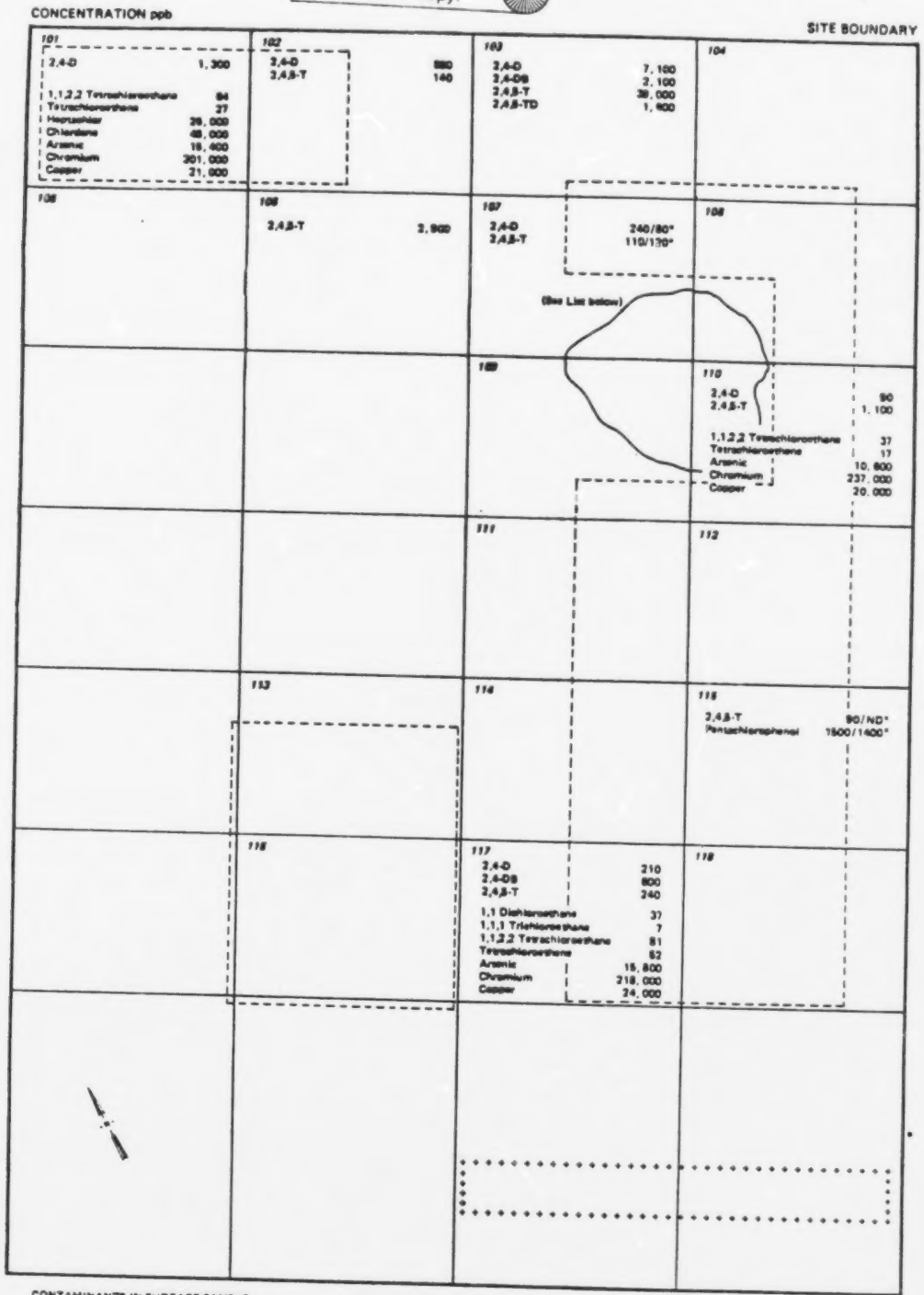


CONTAMINANTS IN SURFACE SAMPLE
QUADRANT 107, ppb

	Sample	Duplicate
1, 1, 2, 2 Tetrachloroethane	31	(70)
Tetrachloroethene	16	(42)
Fluorene	510	(N/D)
Phenanthrene	15,000	(N/D)
Fluoranthene	11,000	(N/D)
Pyrene	12,000	(N/D)
Benzo (a) Anthracene	1,400	(N/D)
Benzo (k) Fluoranthene	840	(N/D)
Benzo (a) Pyrene	370	(N/D)
4, 4'-DDD	37	(N/D)
4, 4' DDT	800	(N/D)
Arsenic	13,200	13,700
Chromium	214,000	264,000
Copper	22,000	33,000

CONTAMINANTS IN OFF-SITE
QUADRANT 124, ppb

1,1,2,2 Tetrachloroethane	7
Tetrachloroethene	7
Arsenic	9,200
Chromium	183,000
Copper	27,000

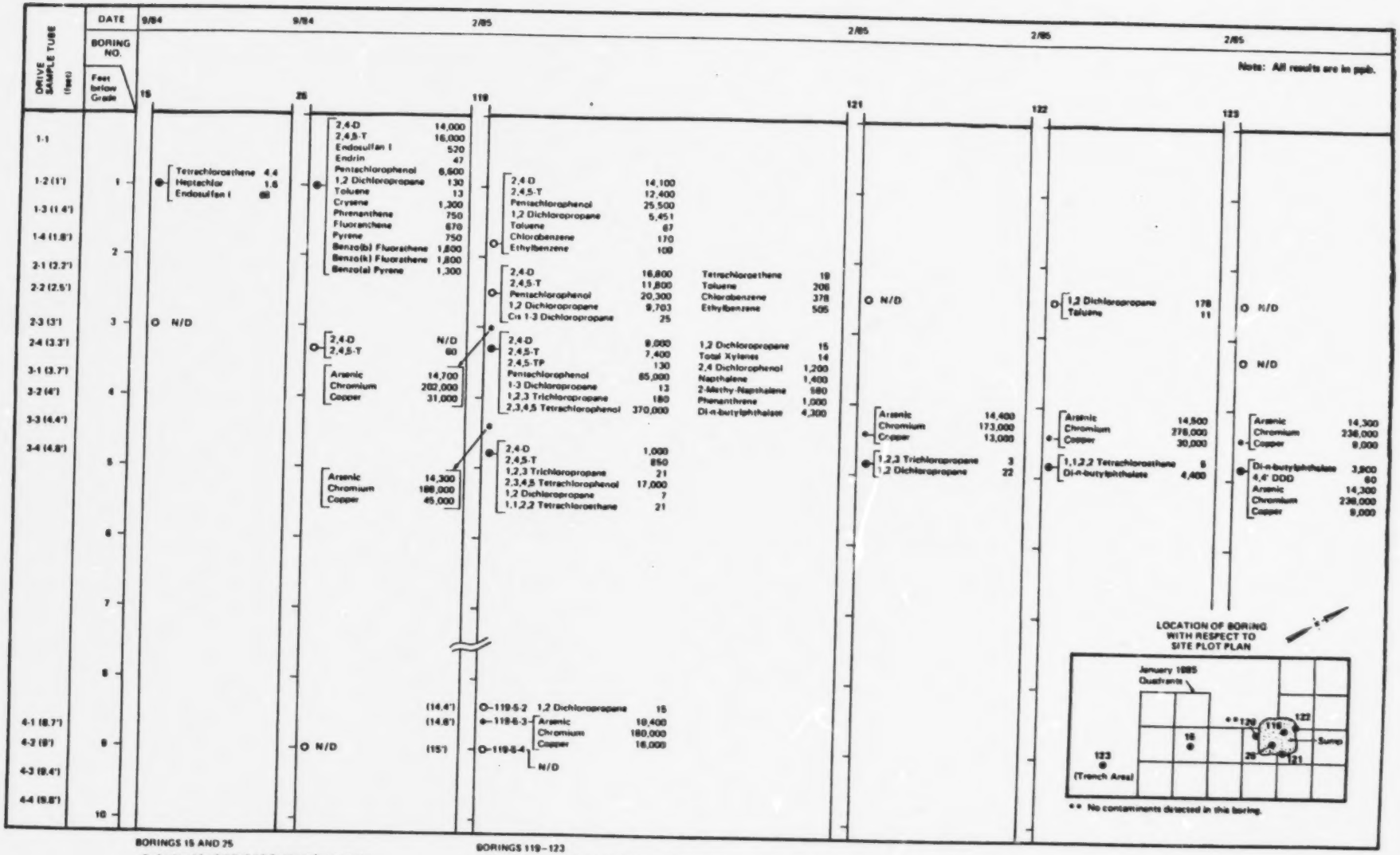
LEGEND

- 25' x 25' On-site quadrants
- Sample / Duplicate Results
- Indicates previous drum storage area
- Indicates previous trench area

Notes:
- Composite surface samples were taken in all quadrants.
- Background sample from Quadrant 126 (see Figure 4-8) contained 14,800 ppb Arsenic, 232,000 ppb Chromium and 9,000 ppb Copper.
- Arsenic, Chromium, and Copper were analyzed only in quadrants showing results.

CONTAMINANTS DETECTED IN SURFACE SOILS,
JANUARY 1985 SAMPLES

Figure 3.



BORINGS 15 AND 25

● Analyzed for 2,4-D; 2,4,5-T; Malathion, Volatiles, Semi-Volatiles and Pesticides

○ Analyzed only for 2,4-D; 2,4,5-T; and Malathion

N/D Nothing detected

BORINGS 119–123

● Analyzed for 2,4-D; 2,4-DB; 2,4,5-T; 2,4,5-TP; Ethion, Malathion, Volatiles, Semi-Volatiles, 1,3 Dichloropropene, 1,2,3 Trichloropropene, and 2,3,4,5 Tetrachlorophenol, Pentachlorophenol

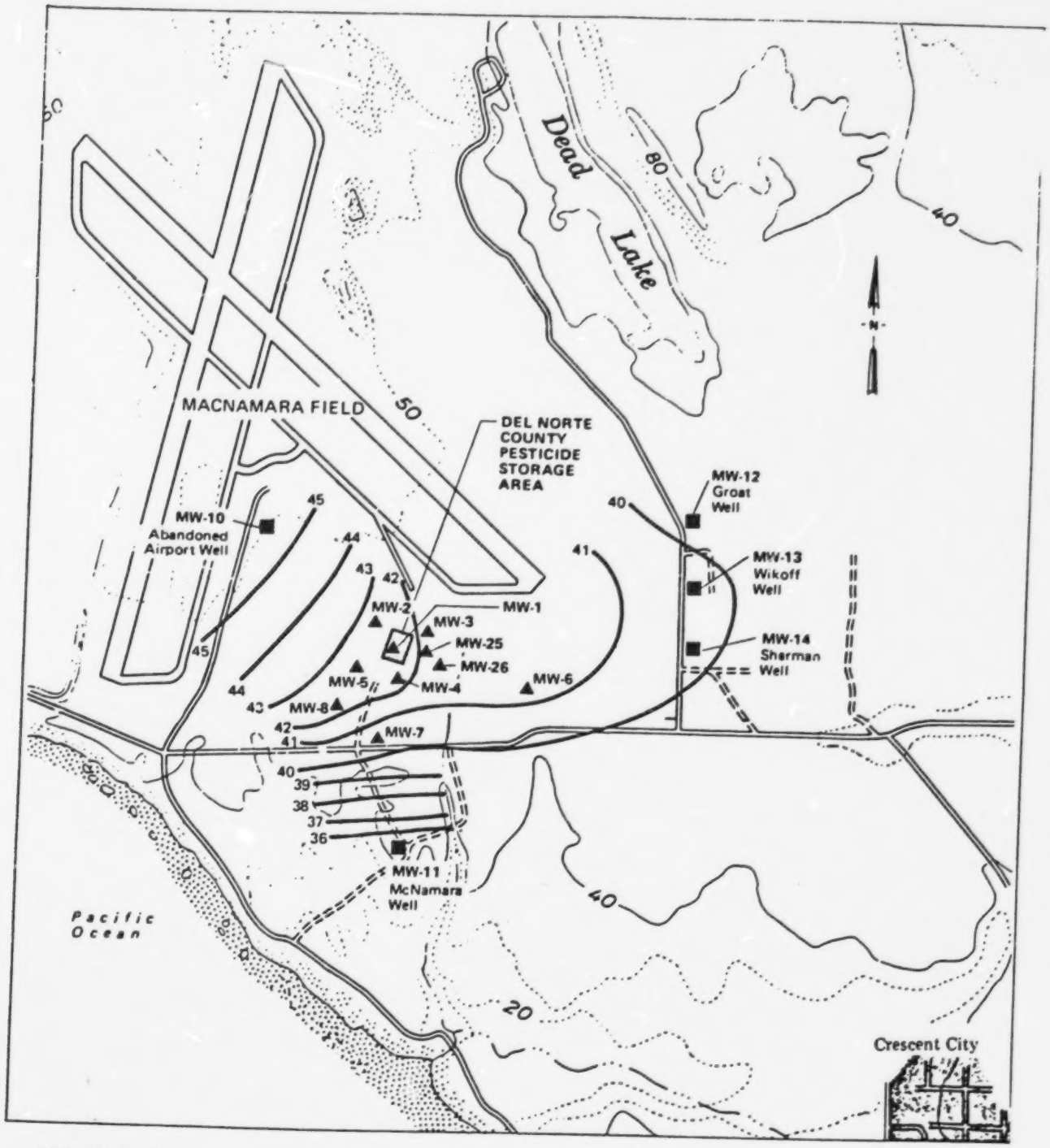
○ Analyzed for 2,4-D; 2,4,5-T; Pentachlorophenol, Volatiles

* Analyzed for Arsenic, Chromium, Copper only. Background (sample 122-3-4) contained 11,300 Arsenic, 277,000 Chromium, and Copper 5,000

N/D Nothing detected

CONTAMINANTS DETECTED IN SUBSURFACE SOILS

Figure 4.



EXPLANATION

■ Private Well

▲ Monitoring Well

45 —— Groundwater Contours – April 28, 1985 (dashed where inferred)

Topographic Contour Interval – 10 feet

0 250 500 1000 feet

Monitoring Well Locations and April Groundwater Contours
Del Norte County Pesticide Storage Area Site

Table 1-1. VOLATILE, SEMI-VOLATILE AND PESTICIDE COMPOUNDS IN GROUNDWATER

Location	Compound	Concentration (ppb)[a] 2-23-85	3-5-85	3-25-85	4-28-85
MW-1	1,2-Dichloropropane	1900	1400	1200v	--
	Benzene	6	*	68v	--
	1,3-Dichloropropane	15	*	*	--
	1,2,3-Trichloropropane	47	*	*	--
	2,4-Dichlorophenol	18	11	*	--
	Pentachlorophenol	*	24	*	--
	2,4,5-Trichlorophenol	34	20	*	--
	2,3,4,5-Tetrachlorophenol	66	*	*	--
	Methylene chloride	*	110	*	--
	2-Butanone	*	39V	*	--
	2,4-D	26	100V	150v	--
	2,4,5-T	68	47V	110v	--
	2,4,5-TP	1.2	*	*	--
	Cis-3-Chloroallyl alcohol	*	17[b]	--	--
MW-17 (duplicate of MW-1)	1,2-Dichloropropane	2100	1200	1200v	--
	Benzene	6	*	*	--
	1,3-Dichloropropane	16	*	*	--
	1,2,3-Trichloropropane	50	*	*	--
	2,4-Dichlorophenol	15	8	*	--
	2,4,5-Trichlorophenol	32	14	*	--
	2,3,4-5-Tetrachlorophenol	57	*	*	--
	Methylene chloride	*	62v	*	--
	2,4-D	40	82v	50v	--
	2,4,5-T	84	41v	110v	--
	Cis-3-Chloroallyl alcohols	*	20[b]	--	--
MW-5	2,4-Dichlorophenol	15	*	--	*
	2,4,5-Trichlorophenol	32	*	--	*
	2,3,4,5-Tetrachlorophenol	57	*	--	*
	Total Xylenes	6	*	--	*
	2,4-D	21	12v	--	*
MW-18 (duplicate of MW-6)	4,4'-DDE	*	0.2	--	--
	4',4'-DDT	*	2	--	--
MW-12	2,4-D	0.6	*	--	--
MW-14	Benzo(a)anthracene	7	*	--	--
	Chrysene	8	*	--	--
	Benzo(e)fluroanthene	3	*	--	--
	Benzo(a)pyrene	6	*	--	--
	Phenanthrene	8	*	--	--
	Anthracene	3	*	--	--
	Pyrene	13	*	--	--

Table 1-1. VOLATILE, SEMI-VOLATILE AND PESTICIDE COMPOUNDS IN GROUNDWATER (concluded)

Location	Compound	Concentration (ppb)[a] 2-23-85	3-5-85	3-25-85	4-28-85
MW-25	1,2-Dichloroprane	--	--	--	5
MW-17 (duplicate of MW-25)	Toluene	--	--	--	46
	Xylenes	--	--	--	5
	Pentachlorophenol	--	--	--	50
	Napthalene	--	--	--	10
	Benzoic Acid	--	--	--	50
MW-15 (blank)	Carbon tetrachloride	*	*	37v	*
	Methylene chloride	*	*	78v	*
	Chloroform	*	*	18v	*

[a]All values reported by EPA Contract Laboratories as estimated and valid for planning purposes (unless otherwise noted).
[b]Lack of trans isomer makes this identification tentative.
*Compound not detected.
--Not sampled on this date.
v-Results reported as valid for all purposes.

- Many of the compounds found in the soil were also detected in the ground water beneath the site. Ground water contamination has spread a distance of about 150 to 300 feet in the southeasterly direction from the on-site sump area.

- Potential use of the contaminated aquifer poses an immediate public health threat. Projections of future migration of ground water contaminants indicate that under conservative modeling assumptions, existing private wells to the southeast of the site could become unsuitable for use in the next 50 to 100 years.

CHROMIUM DISCOVERY

In September 1984, during EPA workplan development, pentachlorophenol was detected in a subsurface soil sample. Since pentachlorophenol is used as a wood preservative, EPA decided to analyze future soil and ground water samples for metals (copper, arsenic, and chromium) associated with wood treating. Copper and arsenic were detected at insignificant concentrations; however, high levels of chromium were detected in January 1985 surface soil samples (see Figure 2), February 1985 subsurface soil samples (see Figure 3) and February, March, and April 1985 ground water samples (see Table 1-2).

The chromium analyses described above were for total chromium, and it is not known in what form (trivalent or hexavalent) the chromium exists. Hexavalent chromium is more toxic than trivalent chromium. EPA's Maximum Contaminant Level (MCL) for total chromium is 50 ppb. Water samples from existing domestic wells in the vicinity of the site showed total chromium considerably below 50 ppb. Samples from the other monitoring wells showed total chromium averaging five times the drinking water standard, with maximum values over ten times the standard (547 ppb).

Two facts indicate that the chromium contamination is not the result of past disposal practices at the pesticide storage area site: 1) background monitoring wells upgradient of the site also contain high levels of chromium and 2) there is no historical information which indicates that chromium or chromium compounds were handled at the site.

We intend to investigate the chromium contamination as a separate site because there is no apparent relationship to the pesticide storage area site. Our next step will be to establish whether the chromium is either hexavalent or trivalent. Following the results of these analyses, we will proceed with the identification of possible sources of chromium, and determination of the extent of contamination.

Table 1-2.

CHROMIUM RESULTS

Sample	Total Cr, 2/85	Total Cr, 3/85	Total Cr, 4/85	Dissolved Hexavalent Cr (VI)[a], 7/24, 25	Dissolved Total Cr[b], 7/24, 25	Total Cr[c], 7/24, 25
MW-1	ND	ND	NS	ND	ND	52
MW-17 (MW-1 duplidate	22	NS	NS	ND	ND	12
MW-2	190	177	NS	ND	ND	353
MW-3	291	547	NS	ND	11	94*
MW-4	157	247	NS	ND	15	117*
MW-5	83	187	38	ND	ND	17
MW-6	331	355	NS	ND	11	245*
MW-18 (MW-6 duplicate)	420	NS	NS	ND	[10]	150*
MW-7	372	226	NS	ND	ND	32
MW-8	144	84	NS	ND	ND	34
MW-10	ND	23	NS	ND	ND	19
MW-15 (field blank)	ND	NS	ND	ND	ND	20
MW-25	NS	NS	104	ND	[9.3]	213*
MW-26	NS	NS	305	ND	[9]	81*
MW-28 (field blank)	NS	NS	NS	ND	[9]	64*

NS = not sampled
ND = not detected: Cr detection limit 10 ppb
* = duplicate analysis not within control limits
a = unacidified samples for hexavalent chromium must be filtered (0.45 mm) and separated A.S.A.P. or within 24 hrs of receipt; samples must be maintained at 4°C until analysis
b = unacidified 1L bottle, sample must be filtered (0.45 mm) prior to analysis
c = acidified 1L bottles
[ ] = indicate Cr between contract detection limit and the instrument detection limit

ALTERNATIVES EVALUATION

The major objective of the feasibility study was to evaluate remedial alternatives using a cost-effective approach consistent with the goals and objectives of CERCLA. A cost-effective remedial alternative is defined in the National Oil and Hazardous Substances Contingency Plan (NCP) of July 16, 1982 (40 C.F.R. 300.68J) as "the lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare, or the environment." The NCP outlines procedures and criteria to be used in selecting the most cost-effective alternative.

Three levels of screening were performed on the remedial action alternatives. First, an initial technology screening was performed to eliminate inapplicable, infeasible, or unreliable technologies. Next, an initial alternative screening was performed, according to the NCP 40 C.F.R. Part 300.68(h) was performed. Finally, we performed a detailed alternative evaluation, according to the NCP 40 C.F.R. Part 300.68(i).

Based on site background information and the nature and extent of the contamination as defined by the technical investigation to date, we developed the following general objectives for cleanup of the Del Norte Site:

- To minimize off-site contaminant migration via ground water, and
- To minimize exposure to contaminated soil.

Key specific cleanup objectives are:

- To prevent the contamination of nearby wells, and
- To clean up the ground water and soils found to be contaminated on-site.

Cleanup of soils and ground water will also serve to address the objective of maximizing the potential use of the land and the aquifer in the area. The contaminants of primary concern at the Del Norte site are 1,2-dichloropropane, and 2,4-D, and chromium because: (1) they were detected in soils and ground water at high levels, and (2) they have adverse effects on public health and welfare and the environment. These compounds were found in both the soils and ground water at the site at levels exceeding applicable standards and criteria.

For soils, the preferred cleanup level is background concentrations. Natural soils, however, do not contain synthetic compounds such as 1,2-dichloropropane and 2,4-D. Thus, a standard other than background is required. In general, exposure to contaminated soil could occur by direct contact or by the compounds in the soil leaching into the ground water. At the Del Norte Site,

contaminants are generally below levels of concern for direct exposure. However, during the winter months when the ground water reaches the ground surface, the contaminants in the soil would leach directly into the ground water. If we assume the contaminants leach into the ground water at an equivalent concentration, our cleanup objective for soil would be the applicable drinking water standard.

Cleanup of chromium in soils or ground water was not explicitly included as an objective because the nature and extent of this problem is not sufficiently understood. Chromium was considered only because it influences the treatment and disposal technologies for organics. Thus, the treatment of chromium present in the ground water will be limited to any ground water that may be pumped out and treated for the removal of organics.

The relevant criteria for soils and ground water cleanup at the site are as follows:

Contaminant	Level	Basis (Federal Criteria)
1,2-dichloropropane	10 ppb	Suggested Adverse Response Level (excess cancer risk of 10^{-6})
2,4-D	100 ppb	Maximum Contaminant Level
Total Chromium	50 ppb	Maximum Contaminant Level

The relevant standards and criteria cited above were the basis for remedial action technologies and alternatives described herein.

Response objectives for the soil and ground water contamination problems at the Del Norte Site include minimizing impacts from on-site contaminated soils and minimizing off-site contaminant migration via ground water. Response actions that address these objectives also address the goals of soil and ground water cleanup.

General response actions for soil and ground water cleanup that would be applicable to the Del Norte site include:

(a) For soils

- In-situ treatment
- Off-site treatment
- Off-site disposal
- Capping/encapsulation

(b) For ground water

- Containment
- Pumping
- Collection systems
- On and off-site treatment
- Off-site disposal

A complete list of technologies considered for the Del Norte site is included in Table 2-1. The table also includes our decision regarding the applicability of each technology.

The applicable technologies identified were combined to form remedial action alternatives that address the cleanup of both contaminated soils and contaminated ground water. In order to reduce the number of alternatives that would be evaluated in detail, the applicable technologies were examined with regard to technical feasibility, degree of public health protection afforded, environmental impact, institutional concerns, and cost. Those technologies that provided the best environmental and public health protection benefits for the least cost were designated as preferred technologies. The others were eliminated.

Preferred technologies for the various components of soil and ground water cleanup are identified in Table 2-2.

According to the proposed NCP, 40 C.F.R. Part 300.68(f) alternatives must be developed for each of the following five categories:

a. Alternatives for treatment or disposal at an off-site RCRA permitted facility approved by EPA.

b. Alternatives that attain applicable and relevant federal public health or environmental standards.

c. As appropriate, alternatives that exceed applicable and relevant public health or environmental standards.

d. Alternatives that do not attain applicable or relevant public health or environmental standards but which will reduce the likelihood of present or future threat from the hazardous substances. This must include an alternative that closely approaches the level of protection provided by the applicable or relevant standards and meets CERCLA's objective of adequately protecting public health and welfare and the environment.

e. A no-action alternative.

TABLE 2-1. SCREENING OF TECHNOLOGIES CONSIDERED FOR THE DEL NORTE SITE

Possible Technologies	Screened Out(S) or Retained(R)	If Screened Out, Reason for Doing So
SOIL EXCAVATION	R	
SOIL DISPOSAL/TREATMENT		
• Capping/encapsulation	S	Technically infeasible
• Dispose of excavated soil in on-site landfill	S	Technically infeasible
• Incinerate excavated soil at an on-site temporary facility	S	Excessive cost
• Dispose of excavated soil in off-site RCRA landfill	R	
• Treat soil on-site	R	
• Incinerate excavated soil using a mobile incinerator	R	
GROUNDWATER CONTAINMENT/EXTRACTION		
• Slurry wall containment	S	Excessive cost
• Pumping alone	R	
• Pumping with an underdrain system	S	Excessive cost
GROUNDWATER TREATMENT		
(a) For Removal of Organics		
• Carbon adsorption	R	
• Aeration	R	
(b) For Removal of Chromium		
• Coagulation/filtration treatment	R	
• Carbon adsorption	S	Technically infeasible: not effective for chromium VI removal

TABLE 2-1. SCREENING OF TECHNOLOGIES CONSIDERED FOR THE DEL NORTE SITE (concluded)

Possible Technologies	Screened Out(S) or Retained(R)	If Screened Out, Reason for Doing So
GROUNDWATER DISPOSAL		
• Dispose of untreated water in an off-site RCRA facility	S	Excessive cost
• Dispose of untreated water by piping it into the Crescent City sewer main or sewer outfall	S	Excessive cost
• Dispose of untreated water into an evaporation pond	S	Technically infeasible: rate of precipitation plus inflow greater than rate of evaporation
• Dispose of treated water into a percolation pond	S	Technically infeasible: rate of precipitation plus inflow greater than rate of percolation and evaporation
• Inject treated groundwater back into ground	S	Technically infeasible: operational problems
• Dispose of treated water by trucking it to the Crescent City wastewater plant	R	
• Dispose of treated water by piping it to the nearest Crescent City sewer main	R	
• Dispose of treated water into the ocean	R	
• Dispose of treated water to surface drainage	R	

The preferred technologies listed in Table 2-2 were combined to form remedial action alternatives which satisfy cleanup objectives and fall into the five categories described above. Table 3 lists the remedial action alternatives which were retained for detailed analysis. At least one of the remedial action alternatives in Table 3 falls into each of the above categories, as follows:

Category a - Alternatives 2, 3, 4, 5, 6

Category b - Alternatives 3, 4, 6

Category c - Alternative 6

Category d - Alternative 2

Category e - Alternative 1

The remaining alternatives were analyzed in detail according to the NCP, 40 C.F.R. Part 300.68 (i). Alternatives were evaluated in terms of cost, technical concerns, public health concerns and environmental impacts. The following discussion describes this detailed analysis. Costs developed for the alternatives are within +50% and -30% of the actual construction costs.

Alternative #1 No Action:

The no action alternative would leave the contaminated soils and ground water in their present locations. However, monitoring of the site would be required to continue indefinitely to detect the migration of the contaminant plume. Annual cost of $35,000 for monitoring would amount to a total present worth over 30 years of $330,000.

The contaminated soils would be a continuing source for contamination of ground water. The plume of contaminated ground water would migrate with time and might reach domestic supply wells. In addition, future well development of the aquifer in the vicinity of the plume would be restricted.

A risk of direct contact with contaminated soil would continue to exist for any person on site. This is, however, a very low risk since the site is fenced, posted, and remote.

Alternative #2 Excavation of soil contamination; no action on ground water:

This alternative would involve the excavation of approximately 700 cubic yards of contaminated soils in the sump and trench areas, plus other known locations of surface or near-surface contamination, and disposal off-site at a federally permitted facility. No action would be taken on the contaminated ground water at this time until the nature of the area-wide source of chromium was determined. Monitoring of ground water, however would be required. Total present worth including a 30-year monitoring period is $805,000.

Table 2-2.

PREFERRED TECHNOLOGIES FOR SOIL AND GROUNDWATER CLEANUP

Component of Cleanup	Applicable Technologies	Preferred Technologies	Reason for Considering Other Technologies Less Preferable
Soil disposal/treatment	Disposal in off-site RCRA landfill	X	
	Treat soil on-site Incineration using a mobile incinerator		Unproven technology Uncertainty in the cost of implementation
Groundwater treatment for			
(a) removal of organic contaminants	Carbon adsorption	X	
	Aeration		Not effective in removing 2,4-D
(b) removal of chromium	Coagulation/filtration treatment	X	
Groundwater disposal	Discharge treated water into ocean water by pipeline		Similar in cost to other alternatives, but a potential for adverse environmental impact
	Truck treated water to Crescent City WWP	X	
	Discharge treated water to surface drainage	X	
	Truck treated water to sewer main		Similar in cost to piping to sewer main, but extended labor charges would be incurred if groundwater pumping/ treating were to exceed two years
	Pipe treated water to sewer main	X	

TABLE 3. REMEDIAL ACTION ALTERNATIVES

Alternative	Remedial Action Name	Components of the Remedial Action
1	No action	• No action on contaminated soils or groundwater • Monitoring and site protection
2	Excavation of known soil contamination, no action for groundwater	• Excavate sump and trench areas plus other known contaminated locations • Dispose of excavated soils in the off-site RCRA landfill • No action for groundwater
3	Excavation of known soil contamination and trucking of treated water to Crescent City WWP	• Excavate sump and trench areas plus known contaminated locations • Dispose of excavated soils in off-site RCRA landfill • Pump groundwater • Treat pumped water by carbon adsorption and coagulation/filtration treatments • Truck treated groundwater to Crescent City WWP
4	Excavation of known soil contamination, and piping of treated water to Crescent City sewer main	• Excavate sump and trench areas plus known contaminated locations • Dispose of excavated soils in off-site RCRA landfill • Pump groundwater • Treat pumped water by carbon adsorption and coagulation/filtration treatments • Pipe treated groundwater to nearest Crescent City sewer main

TABLE 3. REMEDIAL ACTION ALTERNATIVES (concluded)

Alternative	Remedial Action Name	Components of the Remedial Action
5	Excavation of known soil contamination, disposal of treated water to surface drainage	• Excavate sump and trench areas plus known contaminated locations • Dispose of excavated soils in off-site RCRA landfill • Pump groundwater • Treat pumped water by carbon adsorption and coagulation/filtration treatments • Discharge treated water to ground for surface drainage
6	Excavation of entire site, and piping of treated water to a sewer main	• Excavate sump and trench areas plus 1.5 ft over the entire site • Dispose of excavated soils in off-site RCRA landfill • Pump groundwater • Treat pumped water by carbon adsorption and coagulation/filtration treatments • Pipe treated groundwater to nearest Crescent City sewer main

Under this alternative, the source of continuing contamination of ground water would be removed. However, the potential use of the aquifer in the vicinity of the plume would still be adversely affected. Removal of the contamination source would not eliminate this problem. This alternative would not fully comply with cleanup objectives set for this site, since it would leave in place ground water contamination at levels higher than applicable standards. Future well drilling in the vicinity of the site would need to be restricted to prevent use of contaminated ground water for supply.

Excavation and off-site removal of contaminated soils is a proven and reliable technology which has been used at many other hazardous waste sites. Application of stringent health and safety requirements would help prevent potential health risks during off-site transportation of the contaminated soils.

Alternative #3 Excavation of soil contamination; ground water treatment and disposal via trucking to the Crescent City Wastewater Treatment Plant:

Approximately 700 cubic yards of soils from the sump and trench areas would be excavated. These contaminated soils would be disposed off-site at a federally permitted facility. The plume of contaminated ground water would be pumped from the aquifer, and treated using carbon adsorption, coagulation, and sand filtration technologies. The treated ground water would be trucked to the Crescent City municipal waste water treatment plant for additional treatment prior to disposal into the ocean from the deep-water outfall pipe. Total present worth is estimated at $1.41 million.

Under this alternative, the source of continuing contamination of ground water would be removed. The treatment of ground water using carbon adsorption, coagulation and sand filtration to applicable standards would provide a high degree of public protection, and would fully satisfy the cleanup objectives for the site.

Based on preliminary ground water modeling results, it is estimated that extraction of contaminated ground water would continue for approximatley two years. The cost for this alternative is therefore based on trucking treated water to the Crescent City municipal waste water treatment plant for two years. If extraction and treatment extended beyond two years, cost of implementing this alternative would increase proportionally. Under this alternative, there is a low risk of environmental impacts due to the potential for spillage of treated water during the trucking operation. Additionally, the labor intensive means of transport would not fully satisfy requirements for reliability.

The spent carbon filters containing organics, and waste brine containing chromium would be disposed of in a federally approved off-site facility.

Potential health and safety concerns related to all construction activities could be addressed by implementation of proper construction practices and stringent health and safety requirements.

Alternative #4 Excavation of soil contamination; ground water treatment and disposal via piping to the nearest sewer main:

This alternative is the same as Alternative #3, except that the ground water would be piped to the nearest municipal sewer main. From there it would flow to the Crescent City municipal waste water treatment plant for additional treatment prior to discharge from the deep-water outfall pipe. Total present worth of this alternative would be approximately $1.41 million.

This alternative would fully satisfy the cleanup objectives for soil and ground water contamination at the site. Off-site disposal of contaminated soils would eliminate a source of future contamination of ground water. Contaminated ground water would be treated by carbon adsorption, coagulation and sand filtration technologies to the applicable standards and piped to the nearest municipal sewer main (located approximately three-fourths of a mile from the site). The contaminated ground water would be pumped and treated until levels of contamination dropped below the applicable standards. The spent carbon filters containing organics, and the waste brine containing chromium would be disposed off-site at a RCRA approved facility.

If ground water extraction should continue beyond two years, no additional costs would be incurred since the pipeline would already be in place.

Potential health and safety concerns related to all construction activities could be addressed by implementation of proper construction practices and stringent health and safety requirements.

Alternative #5 Excavation of soil contamination; ground water treatment and discharge to surface drainage:

This alternative is the same as the third and fourth alternatives except that the ground water would be treated and piped to surface drainage in the immediate area. Total present worth of this alternative would be approximatley $1.04 million.

This alternative would meet site objectives by eliminating the source of future ground water contamination and treating contaminated ground water to applicable standards. The ground water would continue to be pumped and treated until levels of contamination drop below the applicable standards. However, unlike alternatives three and four, no additional treatment of discharged water would occur because the treated water would not be passing through the municipal waste water treatment plant.

This alternative would be inconsistent with the North Coast Regional Water Quality Control Board's "Water Quality Control Plan, Klamath River Basin (IA)" July, 1975 which prohibits any surface discharge of treated waters (see Consistency with Other Environmental Laws section).

In addition, if the treatment system were to fail over the course of the two year extraction and treatment period, there would be a potential for discharge of untreated water to local surface drainage. This alternative would therefore not be as reliable as Alternatives #3 and #4. The spent carbon filters containing organics, and the waste brine containing chromium would be disposed off-site at a federally approved facility.

Potential health and safety concerns related to construction activities would be addressed by implementation of proper construction practices and stringent health and safety requirements.

Alternative #6 Excavation of entire site; ground water treatment and disposal via piping to nearest sewer main:

This alternative exceeds applicable standards. Excavation would occur over the entire site to a depth of 1.5 feet, in addition to the removal of the 700 cubic yards of contaminated soil as described in Alternatives 2,3,4 and 5. All contaminated soils would be disposed of off-site at a federally permitted facilty. Contaminated ground water would be extracted and treated using carbon adsorption, coagulation and sand filtration technologies. Treated ground water would then be piped to the nearest sewer main. The total present worth of this alternative is estimated at $1.9 million.

This alternative is similar to the Alternative #4, except that excavation of 1.5 feet over the entire site is considered in addition to excavating the sump and trench areas. This would provide a higher degree of public health protection than the limited soil excavation options. Since this alternative will exceed the soil cleanup standards, the probability of leaving any isolated spots of contaminated soil within the site boundary would be reduced to a negligible level.

Since this alternative involves higher volumes of excavated soils than alternatives 2, 3, 4 and 5, a greater degree of exposure would be associated with construction activities associated with Alternative 6. However, the excavation activities would be expected to last less than a week for any of the alternatives, and hence the increase in the exposure would not be significant, particularly if appropriate protection measures are taken.

With regard to the cleanup of ground water, this alternative would physically remove the organic and chromium contaminants to the levels specified as cleanup objectives (applicable drinking water standards). The spent carbon filters containing organics, and the waste brine containing chromium would be disposed of in a federally approved off-site facility.

Summary

A summary of the evaluation of Remedial Action alternatives is presented in Table 4. Alternatives 1 and 2 would not meet the site objectives, nor comply with all applicable environmental laws. Alternatives 3, 4 and 5 would adequately meet the cleanup objectives set for the site, and alternative 6 would exceed the cleanup objectives. The use of a pipeline in alternative 4 would provide a simple, passive method for transporting the treated ground water from the site to the sewer system, as opposed to the labor and mechanically intensive transporting method under alternative 3. Over time, alternative 4 would be more reliable. Also, if the cleanup of contaminated ground water exceeded two years, there would be no additional costs to operate the pipeline. Alternative 5 would meet cleanup objectives, but would not fully comply with the NCRWQCB's Klamath River Basin Plan. In addition, if the treatment plant were to fail, there could be a discharge of untreated water to local surface drainage. This is a significant environmental impact. Alternative 6 would satisfy site cleanup objectives but exceeds applicable standards. Since no significant incremental benefit to public health, welfare or the environment would be realized by excavating to 1.5 feet over the entire site, alternative 6 would not meet the requirements for cost effectiveness when compared to alternatives 3, 4 or 5.

COMMUNITY RELATIONS

Documents made available for public comment included the Remedial Investigation and Feasibility Study reports. The public comment period was held July 9 through July 30, 1985. Public notification of the public comment period was announced two weeks prior to the public comment period through notices in the local newspaper. A fact sheet summarizing the contents of the RI and FS reports was sent to the mailing list on July 9, 1985. There was very little general public interest in the project, so instead of holding a formal public meeting, two meetings were held with interested County, City and State officials and the local citizens action group. The meeting with the local citizens action group, the Friends of Del Norte County, occurred on July 31, 1985. A meeting with Del Norte County and Crescent City officals was held on August 1, 1985. Comments received regarding the recommended alternative were generally favorable. All parties emphasized the need for an additional investigation of the area-wide chromium problem.

Of the four written sets of comments received on the Draft Feasibility Study, three were from state or local agencies, and one was from a citizens action group. Two commentors expressed a preference for Alternative #4, one commentor recommended Alternative 2 (excavation of soil contamination; no action for ground water) be implemented until the occurrence of chromium was explained, and one commentor expressed a preference for no action. Responses to the comments are presented in the Responsiveness Summary attached.

Table 4. Summary of the Evaluation of Remedial Action Alternatives

Alternative	Technical Feasibility	Environmental Impacts	Public Health Concerns	Institutional Requirements	Cost
1. No action	Required groundwater monitoring procedures are routine	Terrestrial animals and birds exposed to contaminated soils	Continued potential for exposure to contaminated soils and groundwater	Long-term groundwater monitoring and maintenance of site security required	Perpetual O&M cost of groundwater monitoring = $35,000/yr. Total present worth cost over 30 yr. = $330,000
2. Limited soil excavation, no action on groundwater	Common equipment and procedures	Potential for adverse environmental impact mitigated. Low environmental risk due to possibility of spill during transportation of contaminated soils	Risk of exposure to contaminated soils minimized. Continued potential for exposure to contaminated groundwater	Permits required for transportation of contaminated soils. EPA manifest documentation required	Perpetual O&M cost of groundwater monitoring = $35,000/yr. Total present worth cost over 30 yr. = $805,000
3. Limited soil excavation, trucking of treated water to the WWP	Common equipment and procedures for soil excavation. Specialized but well-proven equipment and procedures for water treatment	"	Risks of exposure to contaminated soils and groundwater minimized	"	Total cost = $1.23 million
4. Limited soil excavation and piping of treated water to sewer main	"	"	"	"	Total cost = $1.24 million
5. Limited soil excavation and disposal of treated water to surface drainage	"	" + Low potential for environmental impact due to surface release of contaminated water after being treated	"	" + NPDES permit required from NCRWQCB for surface discharge of treated water. Standards for disposal to surface waters established by NCRWQCB's Basin Plan would not be met	Total cost = $1.08 million
6. Excavation of entire site and piping of treated water to sewer main	"	Greater environmental protection provided against exposure to contaminated soils. Low environmental risk due to possibility of spill during transportation of	"	Permits required for transportation of contaminated soils. EPA manifest documentation required	Total cost = $1.75 million

CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

RCRA Subtitle C, 40 C.F.R. Part 264 and 265 contain closure requirements for landfills and surface impoundments that would apply to this site. Under RCRA, the site could not be left in its current state without some form of remedial action. In order to comply fully with all relevant and applicable portions of RCRA, immobilization of the contaminants must be assured; any off-site migration of contaminants would be unacceptable. Excavation of known areas of soil contamination, and extraction, and treatment of ground water to applicable standards, will assure that contaminants will not continue to migrate off-site. Alternative 1 - No Action, cannot comply with RCRA because it cannot prevent ground water from being contaminated by soils which have been found to be contaminated.

Any applicable Occupational Safety and Health Administration requirements will be addressed during the detailed design phase of the selected alternative. Department of Transportation Hazardous Material Transport Rules would be complied with during the off-site transportation of hazardous materials for any of the alternatives which include soil removal. EPA manifest documentation would also be required. Approval of the facility owner and the local communities to accept the contaminated soils would also be required. These requirements apply to all but the No-Action Alternative.

Spent carbon filters containing organics, and the waste brine containing chromium would be disposed of in an off-site RCRA facility. Disposal of these would require State and federal transportation department permits for hazardous waste transport. These requirements would apply to Alternatives 3, 4, 5 and 6.

According to the Proposed NCP, 40 C.F.R. Part 300.68 (i), remedial actions must comply with all relevant and applicable federal laws and regulations unless one of five exceptions apply. None of those five exceptions apply to this site. This quidance also specifies that state standards shall be considered in determining the appropriate remedial action. Alternative 5 does not comply with the North Coast Regional Water Quality Control Board's "Water Quality Control Plan, Klamath River Basin (IA)" July, 1975. Under the plan, any surface discharge of treated waters is unacceptable. Specifically, the proposed treatment of contaminated ground water cannot achieve standards for discharge to surface waters established by the Regional Board's Basin Plan cited above, such as 2 ppb of 2,4-D for a 24-hour period, and zero discharge of 2,4,5-T.

The ground water under the site is considered Class II ground water under the EPA Ground Water Protection Strategy (GWPS). Such a classification indicates that the water is a current or potential source of drinking water or has other beneficial uses. The ground water in the vicinity of the site is presently being used for

agricultural and domestic purposes. According to the GWPS, the goal of remedial actions for this site should be to maintain drinking water quality or background levels. Alternatives 3, 4, 5, and 6 fully comply with the GWPS.

Compliance with the CERCLA Offsite Policy (May, 1985), would be required at the Remedial Action stage. Under the Offsite Policy, no offsite disposal of hazardous wastes would be allowed at any facility not in compliance with RCRA, unless the facility had entered into an enforceable agreement for correcting its problems; and the disposal occured at a unit which was found to be in compliance. During the Remedial Design phase, we will select the RCRA approved facility to use for off-site disposal of the contaminated soils from the Del Norte Site. Any remedial action proposed for the site which includes off-site disposal must comply with CERCLA Section 101 (24).

Alternative #5 would require an NPDES permit, since it involves a discharge to a surface water of the United States. Discharge of treated ground water, as in Alternatives 3,4 and 6 must comply with any pretreatment limits set by the Crescent City Waste Water Treatment Plant. The discharge to the Waste Water Treatment Plant should not jeopardize the plant's compliance with the Ocean Plan limitations of its permit. Any permits required by Del Norte County or Crescent City in conjunction with the implementation of the recommended alternative would be completed during the Remedial Design phase.

No other relevant or applicable federal laws, regulations, requirements, advisories, or guidances are known that might pertain to the remedial actions which were evaluated for this site. Alternatives 3, 4, 5 and 6 fully comply with all applicable Federal and State laws. However, as mentioned above, alternative 5 does not comply with the North Coast Regional Board's Basin Plan.

RECOMMENDED ALTERNATIVE

The recommended alternative (Alternative #4) is comprised of the following elements:

- Excavation and removal of contaminated soils to a RCRA approved, offsite, Class I, hazardous waste disposal facility.
- Extraction of contaminated ground water.
- Treatment of ground water contaminated by organics and pesticides by carbon adsorption.
- Disposal of spent carbon filters containing organic contaminants to a RCRA approved, offsite, Class I, hazardous waste disposal facility.

- Treatment of ground water contaminated by chromium by coagulation and sand filtration technologies.

- Disposal of chromium-rich waste brine to a RCRA approved, offsite, Class I, hazardous waste disposal facility.

- Disposal of treated ground water by piping to the County sewer main.

- Ground water monitoring in accordance with RCRA Part 264.

This action will address all public health concerns by eliminating the potential for direct contact with soils contaminated by organics, pesticides and chromium, as well as eliminating the potential for contamination of domestic supply wells via the migration of the contaminant plume emanating from the on-site federal and state laws, standards, and guidance.

The recommended alternative (Alternative #4) is consistent with the cost effectiveness requirement of the NCP, 40 C.F.R. Part 300.68 (j) which requires "the lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare, or the environment." The recommended alternative also satisfies criterion (A) of CERCLA Section 101 (24), as it is more cost-effective than the other proposed alternatives.

The components of the recommended alternative are all technically feasible and reliable, and when combined, provide an adequate level of protection for public health, welfare and the environment. An alternative which involved trucking of treated water to the Crescent City Waste Water Treatment Plant was rejected although comparable in cost with the recommended alternative, because it was determined to be less reliable over time. Alternative 6 which included the excavation of 1.5 feet over the entire site in addition to all known areas of contamination, was rejected because it cost more and would not provide significantly better protection of the public health, or welfare or the environment.

OPERATION AND MAINTENANCE

There are no O&M requirements for the recommended alternative. Maintenance and operation of equipment is included as part of the remedial action alternative. The soil excavation component is expected to be completed in less than a week and will require no further monitoring. The ground water extraction and treatment system is expected to attain cleanup objectives within two years. Post cleanup monitoring eight times per year for two years to verify that cleanup objectives have been met, will be performed as part of the remedial action program.

SCHEDULE

• Approve Remedial Action; Sign Record of Decision	Sept. 30, 1985
• Transmit an Interagency Agreement to the U.S. Army Corps of Engineers for Remedial Design	Pending Funding
• Award State Superfund Contract for Remedial Design and Remedial Construction	Nov. 30, 1985
• Transmit an Interagency Agreement with the U.S. Army Corps of Engineers for Remedial Action	Feb. 1, 1986
• Start Remedial Action	Sept. 1, 1986
• Complete Remedial Action	Sept. 1, 1989
• Delete Site from the National Priorities List	March 1, 1990

FUTURE ACTIONS

Once this Record of Decision is signed, EPA will enter into an Interagency Agreement with the Corps of Engineers for design of the selected remedial action. Negotiations with the State will then begin on the State Superfund Contract. Prior to the completion of the design of the selected remedial action, at the time when an accurate cost estimate is available, EPA will enter into an Interagency Agreement with the Corps of Engineers for construction of the remedial action. Construction is expected to take approximately two months. Within two years, extraction and treatment of ground water is expected to be completed. An additional two years of monitoring will precede the deletion of the site from the National Priorities List.

1.0 DEL NORTE COUNTY
PESTICIDE STORAGE AREA SITE
RESPONSIVENESS SUMMARY

1.1 INTRODUCTION

This responsiveness summary describes EPA's responses to concerns and comments raised by state and local officials and community members about Superfund activities and proposed remedial alternatives at the Del Norte County Pesticide Storage Area Site. It also provides a brief history of community involvement at the site and community relations activities conducted through July 30, 1985, the close of the public comment period on the Draft Feasibility Study report. This responsiveness summary is organized as follows:

A. Background of Community Involvement and Concerns

B. Summary of Major Comments Received During the Public Comment Period and EPA Responses

C. Remaining Public Concerns

Section B. is based on written and oral comments received by EPA during the public comment period. This section categorizes public comments by their subject matter. The major categories are remedial alternative preferences, water quality concerns, technical comments on the proposed alternatives, enforcement questions, and public participation comments.

The responsiveness summary also includes, as Attachment A, copies of comment letters submitted to EPA during the comment period.

1.1.1 BACKGROUND OF COMMUNITY INVOLVEMENT AND CONCERNS

Del Norte County officials, the California Department of Health Services (DOHS), and the North Coast Regional Water Quality Control Board (NCRWQCB) have been the ones most involved with the site, starting in 1979 when the NCRWQCB issued a cleanup and abatement order to the County. Most newspaper coverage of the site has focused on activities of the NCRWQCB and Del Norte County Supervisors related to the site. The County and some residents in the community have been most concerned with the County's share of site cleanup costs because of County financial problems. The Friends of Del Norte County, an environmental interest group, has followed activities at the site and the recent RI/FS. This group is concerned about where site contaminants will be disposed of, and how EPA will address the problem of chromium-contaminated groundwater.

The following is a summary of community relations activities conducted in connection with the Del Norte Site:

- EPA conducted community interviews and established a site mailing list (March 1985).
- EPA prepared Final Community Relations Plan (June 1984).
- EPA and DOHS briefed representatives from Del Norte County, Crescent City, NCRWQCB, U.S. Congressman Bosco's office, and California Assemblyman Hauser's office (August 1984).
- EPA distributed fact sheet describing proposed RI/FS activities (August 1984).
- Two letters were distributed to the community describing EPA activities at the site: one from the EPA Project Officer and one from the Community Relations Coordinator (February 1985).

- Notices of the public comment period on the Draft Feasibility Study report were announced in the Del Norte Triplicate and Eureka Times Standard (June 22 and 25, 1985, respectively).

- EPA distributed a second fact sheet that described the results of the remedial investigation, presented the remedial alternatives proposed in the Draft Feasibility Study report, and announced the public comment period (July 1985).

- Public comment period was held from July 9 to 30, 1985.

- EPA met with DOHS and NCRWQCB representatives (July 29, 1985) and The Friends of Del Norte County (July 31, 1985) to discuss proposed alternatives. On August 1, 1985, EPA staff met with representatives from Del Norte County, Crescent City, NCRWQCB, and DOHS. Representatives from The Friends of Del Norte County, the Del Norte Triplicate, and KPOD Radio also attended this meeting.

1.1.2 SUMMARY OF RESPONSES TO COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD

Comments raised during the Del Norte Site public comment period on the Draft Feasibility Study report are summarized briefly below. The comment period was held from July 9 to July 30, 1985. During the comment period, EPA briefed state and local officials and The Friends of Del Norte County representatives. Oral comments from these briefings are included in this section. Public comments and EPA responses are organized into the following categories:

- Remedial alternative preferences
- Water quality comments
- Technical comments on the proposed alternatives

- Enforcement questions
- Public participation comments
- Questions and comments unrelated to the Del Norte Site

1.2 REMEDIAL ALTERNATIVE PREFERENCES

1. In written comments, NCRWQCB AND DOHS recommended modifications to the remedial alternatives proposed in the Draft Feasibility Study report. The NCRWQCB preferred the alternative involving limited soil excavation, water treatment, and disposal to a sewer main with the following revisions: (1) Extent of soil excavation should be determined by thorough sampling and analysis during design; (2) treated groundwater should be piped to the nearest Crescent City sewer main; and (3) during the startup of the wastewater treatment plant, treated water should be contained in a holding tank and analyzed for contaminant levels before being discharged to the sewer main. DOHS also recommended that additional soil testing be conducted during the design phase to more closely define the location of contaminated soils prior to remedial action. DOHS supports discharge of treated wastewater to the municipality's sanitation system.

   EPA Response: The Final Feasibility Study report reflects these modifications in Alternatives 4 and 6. During remedial design, soil excavation and sample analyses will be done in order to further define soil contamination. Alternatives 4 and 6 specify piping treated water to a sewer main. Alternatives 3 through 6 specify that treated water should be contained in a holding tank for sampling and analyses during startup of the treatment processes.

2. The Friends of Del Norte County indicated a preference for Alternative 2, excavation of known soil contamination and no groundwater treatment, until EPA more thoroughly evaluates chromium contamination of groundwater. Following EPA's explanation given

below, representatives of The Friends of Del Norte County indicated their support of the recommended alternative.

EPA Response: In a meeting with The Friends of Del Norte County, EPA explained that the chromium issue will be resolved by a separate study.

3. During a briefing for County and City officials, County officials expressed a preference for Alternative 1, the no-action alternative, based on its low cost. They suggested zoning the site as restricted property. Following EPA response described below, the County stated support for Alternative 4.

EPA Response: Federal and state governments are required by law to protect the public health, surface water, and groundwater of the state. Selection of the no-action alternative would degrade rather than protect the groundwater resources in the vicinity of the site. EPA bases its selection of the remedial alternative on several factors in addition to cost.

1.3 WATER QUALITY COMMENTS

1. In a written comment, The Friends of Del Norte County commented that water and soil samples in the vicinity of a monitoring well (MW-5) located upgradient from the drum storage site may indicate that some materials had been transferred out of the designated storage area or that unauthorized dumping of pesticides, fumigants, and toxic materials may have occurred on lands controlled by the Del Norte County Agricultural Commissioner.

EPA Response: As stated in the draft Remedial Investigation report (July 8, 1985), groundwater samples from MW-5 and nearby auger hole 13 were found to contain limited amounts of 2,4-D. Groundwater elevations show that MW-5 is hydraulically upgradient of the source

of contamination on-site. Therefore, the source of the 2,4-D detected in samples taken from MW-5 is not believed to be from the pesticide storage site. This conclusion is supported by the lack of 2,4-D in the auger holes located between the site and MW-5. The area immediately surrounding MW-5 has been extensively disturbed by trenching, the result of animal burial and other activities by the Del Norte County Agricultural Commissioner's Office. It is possible that during these activities, pesticide-contaminated materials may have been placed in the trenches, as evidenced by the presence of a few contaminants in a background soil sample taken near MW-5.

2. Both County and City officials and members of The Friends of Del Norte County were concerned about chromium contamination in the groundwater in the vicinity of the site.

   Four of the six remedial action alternatives specify that the groundwater be treated. The groundwater will be treated for chromium and organics for the length of time required to clean up the organics contamination. Organics removal will be accomplished by carbon adsorption. Chromium removal will be by a combination coagulation/filtration process since it has been determined that the chromium is in particulate form. Further sampling during the remedial design stage will verify the form (hexavalent or trivalent) of chromium. EPA intends to address the source and size of the chromium contamination plume in another study, separate from the Del Norte Site investigation. At present, the source of the chromium contamination is not known.

3. Del Norte County and The Friends of Del Norte County representatives provided suggestions as to the possible sources of chromium contamination in the area, such as past military activities in the area; previous milling operations located adjacent to Dead Lake; past and present uses of the area by the County airport; or past and present uses of the area as an illegal dumping ground.

EPA Response: EPA acknowledges the receipt of this information and will pursue these possibilities as part of the chromium investigation.

1.4 TECHNICAL COMMENTS ON THE PROPOSED REMEDIAL ALTERNATIVES

1. A letter from the Del Norte County Planning Department questioned the cost of monitoring the site under Alternative 1 in light of the conclusion in the Draft Feasibility Study report that there is a low likelihood of direct contact with contaminated soils and contaminated water reaching domestic wells.

   EPA Response: As stated in the Draft Feasibility Study report, Alternative 1 provides for no soil removal and no groundwater treatment, and quarterly groundwater monitoring for a minimum of thirty years. Well monitoring would be required to detect plume migration through the aquifer. Groundwater resources in the site vicinity are contaminated. Selection of the no-action alternative would degrade rather than protect the groundwater resources in the vicinity of the site.

2. At a meeting with EPA, both County and DOHS representatives questioned the environmental impacts of the discharge of treated water to surface drainage.

   EPA Response: Environmental impacts on surface drainage may result from the discharge of untreated water during a period of treatment plant failure. The Final Feasibility Study report incorporates this impact into Alternative 5.

3. The Del Norte County Planning Department indicated that a variety of City, County, and State permits will be required for the implementation of the remedial alternative.

EPA Response: EPA will attempt to meet the intent of all state and local regulations which may apply to the remedial action chosen.

1.5 ENFORCEMENT QUESTIONS

1. At a meeting with EPA, Del Norte County representatives expressed concern about the County's liability for cleanup costs.

   EPA Response: At this time, EPA is continuing to evaluate its enforcement position with respect to the County.

2. The Friends of Del Norte County and Del Norte County representatives inquired about identification of and negotiations with Potentially Responsible Parties (PRPs). The Friends of Del Norte County were interested in the availability of an enforcement-confidential list of PRPs if EPA determined that these parties were not liable for cleanup costs.

   EPA Response: According to EPA policy, this information is available to the public and may be requested by writing to the Regional Office at any time.

1.6 PUBLIC PARTICIPATION COMMENTS

At the August 1, 1985, briefing in Crescent City, a representative of the Del Norte Triplicate requested that EPA give a briefing to North Coast newspapers and radio stations on the status of all sites in northern California.

EPA Response: This type of media briefing is a special request that would be best directed to the EPA Office of External Affairs, 215 Fremont St., San Francisco, California. The Office of External Affairs was informed of this request by Superfund Program staff.

1.7 EPA RESPONSES TO COMMENTS UNRELATED TO THE DEL NORTE SITE

1. A letter from The Friends of Del Norte County questioned where hazardous wastes generated within the County are being transported and what agency regulates the Crescent City Landfill.

   EPA Response: The individual generators of hazardous wastes can send their waste to whatever approved site they choose. Information from manifest forms (stating the waste and disposal site) may be obtained from the Toxic Substances Control Division of the Northern California Section of DOHS. The NCRWQCB routinely samples monitoring wells at the Crescent City Landfill, which is presently not in compliance with State Waste Discharge Requirements.

2. According to the Remedial Investigation report, 1150 drums from the Del Norte Site were transferred to sections of the Crescent City Landfill. However, members of The Friends of Del Norte County said that there is no indication that the NCRWQCB has made any checks to ensure that those areas are free of site contaminants. They also asked about the fate of 3 barrels of hazardous materials once under the control of the County Agricultural Commissioner.

   EPA Response: The 1150 drums ultimately disposed of at the Crescent City Landfill were certified by the County Agricultural Commissioner as either having been adequately rinsed prior to storage at the Del Norte Site or having been open to the elements and adequately rinsed by rainwater. Regarding the 3 barrels of hazardous materials, on November 17, 1983, the barrels were shipped to a disposal site in King City, California.

1.8 REMAINING PUBLIC CONCERNS

The major public concern is contamination of the groundwater with chromium. During the remedial design phase, further soil and water

sampling will verify the form (hexavalent or trivalent) of chromium. Hexavalent chromium is much more toxic than trivalent chromium. Following the additional analyses, EPA will make a determination as to further investigation of chromium contamination. If hexavalent chromium is present, EPA should anticipate community inquiries about the chromium contamination and possible health effects. Another ongoing concern in the community is the liability of the County for cleanup costs. EPA should maintain contact with NCRWQCB, Del Norte County, and The Friends of Del Norte County representatives on the chromium issue, enforcement, and the schedule for the remedial action.

Attachment A

STATE OF CALIFORNIA
GEORGE DEUKMEJIAN, Governor
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
NORTH COAST REGION
1000 CODDINGTOWN CENTER
SANTA ROSA, CALIFORNIA 95401
Phone: 707-576-2220

August 9, 1985

Ms. Michele Dermer
Toxics and Waste Management Division
U.S. Environmental Protection Agency
Mail Code T-4-3
215 Fremont Street
San Francisco, CA 94105

Dear Ms. Dermer:

The draft Feasibility Study for the Del Norte County Pesticide Storage Area dated July 8, 1985, has been reviewed. The following recommendations are based on this review and the clarification of specific points established during our meeting on July 29, 1985, with the Department of Health Services and Woodward-Clyde Consultants.

The remedial action alternatives that we prefer along with additional considerations are as follows:

1. Limited soil excavation to include excavation of the sump and trench areas along with other areas of identified contamination. A thorough sampling and analysis of soils during the design phase will serve as a basis for determining the extent of contamination and excavation.

2. Pump and treat the contaminated groundwater as proposed and discharge the treated water to the nearest Crescent City sewer main via a pipeline. The nearest sewer main is located on Pebble Beach Drive, approximately 5800 feet from the site.

We prefer the above alternatives for the following reasons:

1. The high cost associated with the removal, transport, and disposal of soil can be minimized by identifying and removing only the contaminated soils.

2. The discharge of treated wastewaters (treated groundwater) to surface or groundwaters of the State is not an acceptable alternative. The proposed treatment cannot achieve standards for discharge to surface waters established by the Regional Board's Basin Plan, i.e., 24-hour average of 2 ppb for 2,4-D and zero discharge for 2,4,5-T. Discharge to the sewer main will provide additional treatment and greater than 100 times dilution before discharge to the ocean.

3. The use of a pipeline provides a simple, passive method for transporting the treated groundwater from the site to the City's sewer system. Installation of the pipeline will probably cost significantly less than trucking the treated groundwater, and it will eliminate the potential for labor and mechanical problems. Also, if the cleanup takes longer than the predicted two years, there will be no additional costs to operate the pipeline.

In addition to the acitivites already detailed to carry out the above alternative, it will be necessary to provide facilities to hold the treated groundwater in order that it can be analyzed for contaminant levels before it is released. This batching procedure must be continued until the groundwater treatment facility is operating in a consistent and satisfactory manner.

If you have any questions regarding the above, please contact me.

Sincerely,

Charles S. Greene
Associate Land and
Water Use Analyst

cc: Mr. Dave Gaboury
Woodward-Clyde Consultants
1 Walnut Creek Center
1000 Pringle Avenue
Walnut Creek, CA 94596

Friends of Del Norte County
P.O. Box 229
Gasquet, CA 95543

The Friends of Del Norte County

P.O. Box 225 • Gasquet, California 95543

July 30, 1985

Reproduced from best available copy.

Michele Dermer
Project Manager
U.S. EPA, (T-4-3)
215 Fremont Street
San Francisco, CA 94105

SUBJECT: Comments on Del Norte County Pesticide Storage Site draft Remedial Investigation & Feasibility Study

The Friends of Del Norte County have reviewed the draft Remedial Investigation (RI) and Feasibility Study (FS) for the Del Norte County Pesticide Storage Area "Superfund" Site. We commend the EPA for assuming responsibility for cleaning up this site after our local officials pleaded lack of funds and declined to clean up the contamination they either generated or allowed to occur. We offer the following comments on your draft RI & FS.

We believe that immediate action should be taken to excavate the known locations of surface and near-surface pesticide contamination for disposal off-site at a federally permitted facility but, that treatment of contaminated groundwater should be deffered until the cause and extent of area-wide chromium contamination is determined. Your July '85 "Fact Sheet" identifies such a choice as Alternative #2; the FS's Alternative #2 does not imply that action will eventually be taken to remove and treat pesticide contaminated groundwater. The FS discussions of alternatives 3--6 indicate that removal of chromium complicates the treatment of pesticide contaminated groundwater; once the chromium situation is fully understood we would not be surprised to find out that pesticides complicate the treatment of chromium contaminated groundwater.

The revelation that chromium and other metals are present in both the soil and groundwater surrounding the Pesticide Storage Area greatly distresses us. We urge the EPA to determine as rapidly as possible if the chromium concentrations observed are of trivalent or hexavalent chromium. We feel that if hexavalent chromium is present at unacceptable levels in the present monitoring wells that the all of the airport property should be checked so that an adequate risk assessment can be performed.

Since we expect that EPA will eventually treat and dispose of contaminated groundwater in the Pesticide Storage Area & McNamara Field complex it is appropriate to comment that--in our view--trucking of treated wastewater to the Crescent City deep-water outfall is the prefered option for final disposal of

such fluids. It is apparently the cheapest option that does not unduly alter the present surface/groundwater regime of the area. It should have the lowest probability of unexpected complications.

Finally, we must admit to some dismay at the failure of the EPA to evaluate all possible contamination sites that have resulted from the activities connected with the operation of Del Norte County's Pesticide Container Storage Area. Section 1.1.2, 'Site Closure', of the RI states that 1,150 drums were transfered to special sections of the Crescent City Landfill; however, there is no indication that any checks have been made to insure that those areas are free of contamination by the same materials that pollute the "Superfund" site. The RI, Section 1.1.2, also reveals that 3 drums of hazardous material from the site have remained under the control of the County Agricultural Commissioner for over 3 1/2 years, apparently still awaiting shipment to a Class I disposal site. Water and soil samples in the vicinity of MW-5, up-gradient from the acknowledged storage site, show that some material may have been transfered out of the designated area or that "unauthorized" dumping of pesticides, fumigants, and toxic material may have occured on lands controled by the County Agricultural Commissioner. (It may be pertinent to point out that this county has never had an SPCA; all animial control functions here are performed by the Agriculture Department.) Given the track record of our Agriculture Department with respect to the authorized pesticide container storage site, we feel strongly that all opportunities for possible soil or groundwater contamination resulting from its existence should be completely checked out.

We appreciate the opportunity to comment on EPA's draft RI and FS on the Del Norte County Pesticide Storage Area. We hope that our comments will assist you in developing a final set of studies that adequately address all the man-induced contamination of the soil and groundwater in the vicinity of McNamara Field and the Del Norte County Agricultural Commissioner's area of responsibility.

Sincerely,

Martin C. Kelly

Martin C. Kelly
President

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Friends of Del Norte County, P.O. Box 229, Gasquet, CA 95543

COUNTY OF DEL NORTE

PUBLIC WORKS BUILDING
700 FIFTH ST.
CRESCENT CITY, CALIFORNIA 95531

RE... U.S. REGION... COMM. CENTE...
'85 AUG -1 P2:01

July 30, 1985

AREA CODE 707
464-7953

PLANNING DEPARTMENT

Michele Dermer
Project Manager
U.S. EPA (T-4-3)
215 Fremont Street
San Francisco, CA 94105

RE: Del Norte County Pesticide Storage Area Site
Feasibility Study

Dear Ms. Dermer:

Yesterday I returned from a vacation and have found the above referenced document on my desk for review and comment. In order to meet your public comment period my comments are prepared without benefit of the Board of Supervisors and Planning Commission review. Additionally, my comments may have already been addressed in previous correspondence not received by this office as our involvement has been quite limited.

Our comments are as follows:

1. Under all the alternatives identified who bears the financial cost? This County is quite limited in its financial abilities and our financial constraints are reflective of the local economy.

2. On Page 1-15 the report states that the prevention of groundwater leaching is the most sensitive criteria for site cleanup. Further on, the report states that the treatment of extracted groundwater for chromium would have little effect on the continued "contamination" of groundwater since extracted groundwater will be replaced by chromium-contaminated groundwater from the surrounding area. The report refers to the source of this chromium contamination as a previous land use (RI pg. ix). Would the continued monitoring in Alternative One include identifying the source of the chromium contamination and identify any action, if necessary, appropriate to remedy the contamination? If not, does EPA propose to address the chromium contamination further than this report?

3. The prior land use at the project site was under the direction of the Secretary of the Navy. To date we have no specific information which would explain in any detail the Navy's activity at the project site. As a fellow Federal agency you may be able to obtain information which could explain any of their activity and any source of potential chromium "contamination".

4. On Page 4-2 the report states that the likelihood of direct contact with contaminated soils and the likelihood of contaminated water reaching domestic wells is considered low, what are the costs involved with monitoring under Alternative One providing to the involved agencies?

5. Alternative Five provides that the treated ground water would be discharged to surface drainage. What drainage course would be used and could a map of the route of the drainage course be provided? Will there be any anticipated impacts on wildlife, domestic animals or riparian and wetland vegetation?

6. Assuming excavation of the site, will the site be backfilled and will the area be continued to be monitored? What use, if any, will the site be available for after backfill?

7. A local grading permit may be required and a Coastal Consistency determination by the State Coastal Office may be applicable.

The report appears to down-play Alternative One as a viable alternative. Under the circumstances involved it appears that it may have genuine merit that should be more carefully considered by your agency.

Thank you for this opportunity to comment.

Sincerely,

ERNEST PERRY,
Director of Building
and Planning

EP/db
CC: Board of Supervisors
Planning Commission

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF HEALTH SERVICES
714/744 P STREET
SACRAMENTO, CA 95814
(916) 324-3773

Mr. Keith Takata
U.S. Environmental Protection
Agency, Region 9
215 Fremont Street
San Francisco, CA 94105

Dear Mr. Takata:

DEL NORTE COUNTY PESTICIDES FEASIBILITY STUDY, RECOMMENDATION FOR REMEDIAL ACTION.

The Department of Health Services has reviewed the alternatives for Del Norte County pesticides storage site contained in the July 8, 1985 draft Feasibility Study (FS). Six alternatives are suggested to handle the contaminated soil and the groundwater contamination. Generally, the soil contamination consists of organic chemicals and exists in a sump area and several former drum storage areas. However, the groundwater is contaminated with several organics and hexavalent chromium and extends beyond the site. Apparently the chromium is coming from outside sources.

The six alternatives discussed in the FS are summarized below:

- no action well monitoring only - $330,000 present worth;
- limited excavation no action on groundwater - $796,000 present worth;
- limited soil excavation, water treatment and disposal (treatment using carbon absorption and trucking water to Crescent City Waste Water Treatment Plant) - $1.41 million;
- limited soil excavation, water treatment and disposal. Same as above but water trucked to nearest sewer manhole - $1.41 million;
- limited soil excavation, water treatment and disposal. Same as above, but short outfall to nearby drainage course. National Pollution Discharge Elimination System permit would be required $1.04 million; and
- excavate entire site to 1 1/2 feet and all hot spots, treat water and discharge to the local drainage course - $1.56 million.

AUG 20 1985

Based on our review of the problem and consideration of the above alternatives, the Department would like to recommend a different approach. Based on reviewing both the FS and the Remedial Investigation it appears that insufficient area characterization exists to designate a 1-1/2 foot excavation depth over the entire site. However, contaimination appears to exist on the surface throughout the site. In view of the approximately $500,000 extra cost for the 1-1/2 foot excavation, it would seem prudent to perform additional testing prior to final design to determine the location of contaminants.

The Department supports groundwater treatment for both organics and chromium. Further, the Department supports a discharge of the treated wastewater disposal to the municipality's sanitary system because of uncertainty over the length of pumping time.

If you have any questions please call Mr. Steven Viani of my staff (916) 324-2444.

Sincerely,

ORIGINAL SIGNED BY
THOMAS E. BAILEY

Thomas E. Bailey, Chief
Program Management Section
Toxic Substances Control Division

cc: Michel Derner, EPA
David Gaboury, Woodward-Clyde Associates